

# THE ZOOLOGIST

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## FLYING FISH IN MEDWAY AND SWALE (KENT).

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KENT CAPTURES.—In the 'Report on Thames Estuary Sea Fisheries,'\* pt. i. p. 125, mention is made of a Flying Fish (*Exocoetus volitans*?) as follows:—"We have here to add to our district's fish fauna a rare traveller from the Atlantic. This unique example got up the Medway as far as Rochester at the end of September, 1898. A person, noticing a fish leap from the water and skim along the surface, struck out with his walking-stick, and secured it. It proved to be a Flying Fish, measuring fifteen inches in length."

The above specimen was not seen by me, but from informant's description there is strong presumption of its similitude with a second example more recently obtained in a by-water connected with the mouth of the Medway.

This latter specimen was caught on Sept. 2nd, 1905, by two Leigh-on-Sea fishermen (Mr. Wesley Bundock and his mate), who were whitebaiting over in Kent waters, not under the jurisdiction of the estuarine authorities.† The men were using the

\* Issued (1904) by the Kent and Essex Sea Fisheries Committee.

† We may observe *en passant* that the Kent and Essex Sea Fisheries bye-laws forbid whitebaiting during the months of August, September, and October. But this fishery notwithstanding is allowed by the Queenborough Zool. 4th ser. vol. IX., November, 1905.

seine- or drag-net not far from Queenborough, viz., at the southern corner of the West Swale, somewhere between the outlet of Milton Creek and Elmley Ferry (see diagram, fig. 1). It was early morn, about daylight, shortly after high-water, when, on hauling in the drag-net, they were surprised at the unusual spluttering therein. This they found to be from the presence of a long Pike- or Herring-like fish, very unlike anything met with in their usual catch in the Thames Estuary. The great length of the pectoral fins was a feature which at once arrested the attention of the fishermen.

In due course the fish was brought to me for identification, and off-hand I recognized it as bearing close resemblance to the Greater Flying Fish of Couch (his *Exocætus volitans*); as likewise similar to Yarrell's and Day's figures of the same species (compare remarks under next subheading—What species?).

In so far as we are aware, the two fishes in question are the only authentic evidence of the presence of species of Flying Fish (*Exocætus*) on the Kent shores. Howsoever, in an interview with Mr. Bundock, captor of No. 2, about a fortnight afterwards, he mentioned with glee that a day or two previously he had seen another Flying Fish (?) towards sunset near the place where the former one had been secured. Cross-questioned as to possibility of its being a Mullet, he affirmed that he was pretty positive it was a Flying Fish! But he only based his opinion on the manner in which it escaped from the net, not leaping over the meshes in Mullet fashion; so one hesitates to accept this as proof positive.\*

Incidentally I may mention that I have been asked—did I think No. 2 made its way through mouth of the Medway, thence

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Corporation, and pursued within their restricted area during the said three months' close-time of their neighbours. Again, the Thames Conservators entirely prohibit whitebaiting at all seasons in any form within the limits of their jurisdiction. The Rochester authorities of the River Medway pursue a nearly similar course to the last. The boundary lines of those several bodies' districts so abut as to be merely nominal, and unfortunately not always strictly respected by the fishermen. Such are some of the vexatious troubles and anomalies of fisheries' regulations.

\* The same may be said of a rumour from a correspondent of leaping (flying?) fish seen near Margate in early September, which subsequent inquiries did not verify.



narrow Queenborough entrance leading into the West Swale, or otherwise? My reply is, more chance of its entry by the Whitstable end of the East Swale by following up the whitebait at the first of the flood (see arrow in diagram).

A mere notice of the Kent locality of the Flying Fish might have sufficed for a record, but on the examination of the second straggler there has arisen queries. These, though of a minor kind in themselves, yet seem to me to lead to matters of a wider significance, and I therefore venture to treat of them accordingly.

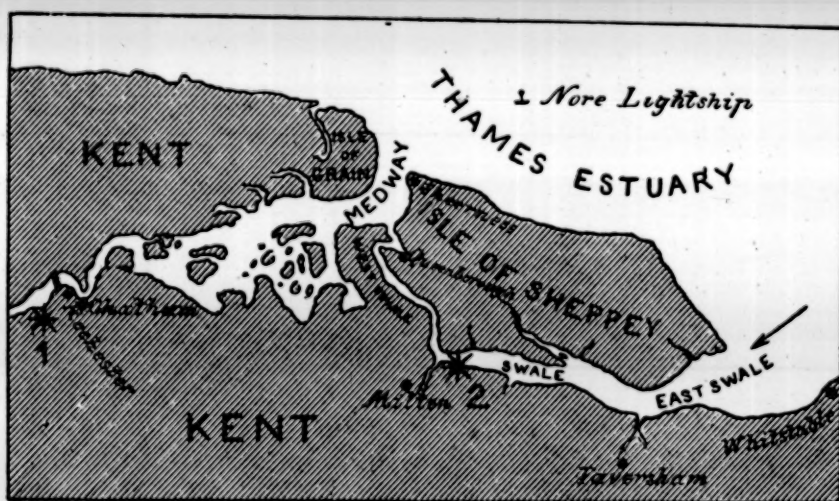


FIG. 1.—Rough chart of Medway and Swale neighbourhoods. \*1 and \*2 indicate approximately where the two Flying Fish were taken.

WHAT SPECIES?—Although we mention above its apparent outward resemblance to the so-called Greater Flying Fish of English writers, viz., *Exocætus volitans*, Linn., yet a more critical examination and comparison with specimens in the British Museum collection has rather led to the inference of its correspondence with the Streaked Flying Fish, *E. lineatus*, Cuv. and Val. Such has been the determination arrived at by Messrs. Boulenger, Regan, and myself.

Hitherto two kinds of Exocætal Flying Fish have been allowed generally by British authorities as occasional visitants to our shores. One with *short ventrals* and other characteristics—*E. evolans*, type; others (got more numerous) with *long ventrals*,

&c.—so-called Greater Flying Fish, *E. volitans*, or kindred. But there may rest uncertainty whether all the latter have been fish that would rigidly come under the specific denomination of *E. volitans*? According to our interpretation a third British kind may be added—the Streaked Flying Fish, *E. lineatus*—that is to say, if this and all the previous identifications are substantial.

This seems rather an open kind of verdict, but under the circumstances unavoidable; for when what is supposed to constitute positive specific distinction is put to the test, sharpness of definition gives way. When such authorities on the group as Gunther,\* Lutken,† Jordan, and Evermann‡ are not in concord with regard to the above and other species, the matter may be regarded as still *sub judice*.§

This Kent specimen was a female, about fifteen inches in extreme length (tail-tips faulty), and in weight turned the scale slightly over eight ounces. Colour herring-like. The dorsum blackish, or rather of an intense bluey grey, this shading to a lighter tint or pale blue of iridescent character towards the lateral line. Head dark above, but the sides and lower parts of gill-covers right back to root of pectoral fin, as also abdomen, of a silvery white. The general expanse of the large, wing-like pectoral, when spread out, greyish, with post-inferior margin darker. But the outer prominent surface of the rays, markedly their basal ends, are silvery; so that when they are approximated, fin closed on body, there appears a lengthened patch of iridescent sheen passing from the shoulder across the fin, parallel to its long axis. The caudal forks, the dorsal, the anal, and the ventral fin pale or greyish; the ventral, however, most conspicuous on its inside superficies, having the middle rays of darker tint less appreciable on the external surface when the fin is expanded. Irregular traces of a series of minute pigmentary

\* 'Cat. Fishes in Brit. Mus.' vol. vi. (1866).

† "Vidensk med. Naturh. Foren" (1876), and "Contr. diagn. Poiss. Volan." Journ. Zool. tome vi. (1877).

‡ "Fishes of North America," Bull. U.S. Nat. Mus. pt. i. (1896).

§ Smitt, in his 'Scandinavian Fishes,' i. p. 58, makes an important observation, and arrives at the conclusion that *E. lineatus* is identical with Linnæus's *E. volitans*, and even hints that *E. bahiensis* may be included with them as one species.



spotting along each oblique series of scales, most clearly distinguishable where epidermis intact.

The elongate shape of body—a mixture of Pike or Garfish type—contrasts with the Pilchard form of the head. The top of the latter or interorbital space is depressed or slightly concave. The big eyes themselves are only moderately prominent though staring; the pupil large, deep blue, approaching black, the irides lustrous. The opening of post-nostril, which is covered by a flap, is a trifle nearer eye than snout; the latter is obtuse and shorter than the more pouting inferior maxillæ. No barbel present, but instead a fringe of very short, slender papillæ is evident, by hand-lens, on the projecting under lip. Teeth in both jaws very diminutive.

Fin formula :—D. 12, P. 16, V. 6, A. 9, C.  $1\frac{3}{8}$ ?

Mr. Regan and myself had doubts respecting enumeration of the scales on the lateral line, some of which had got rubbed out of place.\* There seemed about fifty-eight?, and some thirty-eight or so between the occiput and the dorsal fin. Between the origin of the latter and the lateral line to all appearance were eight? rows of scales.

Measurements :—Length from the tip of the jaw to the root of the tail (i.e., to last caudal vertebra)=12 in. The lobes of the tail were both defective at their extremities. The upper supposed to be 2 in. and the lower one 3 in. long when intact. This would give approximately an extreme length to the fish of 15 in., as already suggested. Depth of the body  $1\frac{1}{2}$  in., and its girth behind the pectorals equivalent to, say,  $4\frac{3}{4}$  in. Length of head  $2\frac{5}{12}$  (or  $2\frac{1}{2}$ ) in.; the diameter of the eye about  $\frac{1}{12}$ ths of an inch.

As to the fins generally, their relative positions, &c. :—The length of pectoral 8 in., and extending even beyond the last anal ray, nearly to the rudimentary rays of the caudal. When expanded as in the act of flying, from tip to tip, barely 15 in. [Mark, these do not descend to horizontal level.] The first ray simple, the second divided, and third and fourth longest. The dorsal fin situated well behind, its base 2 in. long (the rays

\* Regarding authors' discrepancies of numbers of scales in fish, Dr. Day's remarks thereon (P.Z.S. 1879, pp. 759-60) in the case of the Pilchard may here be appropriate.

injured). Ventral fins inserted about midway between the pupil and the last caudal vertebrae. The first ray of the anal nearly vertical with middle of dorsal, and its base  $1\frac{1}{10}$  in. long.

**Its Food.**—Concerning the nature of its food, the stomach and intestine contained only remnants of a semi-digested, light buff-coloured, pulpy substance. This, under the microscope, gave no indications of minute crustacean or molluscan structures, all being reduced to a state of granular consistence. But on opening the mouth the presence of a fish's tail revealed a small whitebait (a couple of inches or so long), which had got stuck in the throat, and reaching to as far as the oesophageal entrance of the stomach. It broke to pieces on the endeavour to extract it, so I cannot say with certainty whether young of Herring or Sprat.

The ordinary and prevalent diet of the Flying Fishes has been far less studied than their aerial movements. Professor Mobius\* opened one (*E. brachysoma*, Bleeker) about 8 inches (=20 centimetres) long, which flopped right on to him aboard ship, at sunset, in the neighbourhood of Seychelles, Indian Ocean. Its alimentary tract contained pulpy matter, among which were diminutive crustaceans. (Couch, 'Brit. Fishes,' vol. iv.) surmises that minute Crustacea and Mollusca form their aliment. Jordan and Evermann† only ambiguously say of the group—"carnivorous and herbivorous," but give no data. Judging from the Swale example, fish may at times form a considerable proportion of their food, and even lead to seasonal migrations (see remarks further on). In support of their being consumers of fish, we may quote F. D. Bennet,‡ who says:—"Their flesh is the *bonne bouche* of travellers;§ it bears some resemblance to that

\* "Die Bewegungen der fliegenden Fische durch die Luft," Zeitsch. für Wissensch. Zool., Bd. xxx. Suppl. p. 344.

† 'Bull. U.S. National Museum,' pt. i. p. 727 (1896).

‡ 'Narrative of a Whaling Voyage round the Globe from the Years 1833 to 1836,' vol. ii. p. 286.

§ Brown-Goode observes: "They are considered excellent food" ('Fishery Industries of United States,' pt. i. p. 459); Dr. Gunther, speaking of *E. callopterus*, adds: "They are excellent eating" ('Introd. Study of Fishes,' p. 622); Messrs. Jordan and Evermann declare that the Sharp-nosed Flying Fish (*E. acutus*) and the California Flying Fish (*E. californicus*) are both "good-food-fish," and the latter "sometimes taken by thousands off Santa

of the Herring. . . . Although the Flying Fish excites so much commiseration for its persecuted state, it is itself predaceous, feeding chiefly on smaller fishes." Again, Smith's sea-angling experiences in his voyage to Callao point to the same thing, where an artificial gilt minnow proved irresistible as a bait.\*

THE OVARIES.—As to sexual condition, each ovarian tube was about four inches long, flaccid, but considerably contracted, like that of a spent fish, as it proved to be. Although the great bulk of the eggs had been extruded, there still remained a few unripe ova, slightly varying in phase of development. Size of the larger ones from a sixth to a third of a millimetre. Their shape generally is globular, though some with tendency to spheroidal outline. But the most notable feature consists in the presence of an envelope or covering of a minute filamentary kind, disposed somewhat spirally, the overlapping and inter-crossings giving a partial reticular character. The fibrillar arrangement may, in fact, be compared to a ball of twine, the latter wound round in somewhat irregular though concentric fashion. Our specimens, as examined under the microscope, in a watery medium, seemed to imbibe the fluid and swell out the fibres; some of the terminal ends of these untwisting floated free (see fig. 2, larger ova).

Haeckel,† when a pupil of Johannes Müller, some fifty years ago, published an interesting paper fully illustrated, containing his observations on the fibrillated ovarian eggs of members of the Gar-Fish family, besides the Flying Fish, which contribution Kolliker‡ duly commented on; this latter, however, was chiefly their histological aspect. To Frank Buckland§ a certain credit is due in pointing out how that at Herne Bay weir the "Gore-bill's" eggs adhered to the sticks and stones by their grasping

Barbara." An opposite opinion is given by Gervase Mathew, who says that those the Hawaiians (= Sandwich Islanders) catch, averaging  $1\frac{1}{2}$  lb. in weight, "are rather dry and tasteless, but acceptable to any one who has been without fish for a length of time" (see 'Zoologist,' 1873, p. 3740); Day ('British Fishes,' ii.) alludes to them "As food—Inferior."

\* 'The Zoologist,' 1875, p. 4413.

† "Eier der Scomberesoces," in Müller's Archiv, 1855, pp. 23–31, Taf. iv–v.

‡ In 'Wurzburg Verhandl. Phys. med. Ges.' viii. (1858).

§ 'Rep. Sea Fisheries,' 1879, Append. ii.

vibratile cilia. But Ryder\* shortly afterwards still more strongly emphasized the function of the thread-bearing eggs by practical researches on those of the Silver Gar (*Tylosurus longirostris*) and the Atherine, Silver-Sides (*Menidia notata*), &c., drawing attention to its importance from a sea-fisheries standpoint. He regrets having had no opportunity to study the eggs of the Flying Fish, nor have others, so far as I am aware, essayed to corroborate Haeckel's exposition of the Exocœtal egg type, though Gar-Fish eggs have repeatedly been examined.† Millet‡ had early shown fish-eggs attached to a barrel-hoop floating near Cape Verde Islands, and Rattray subsequently, when sounding in Gulf of Guinea, found pelagic ova fixed in mass on a tow-net line. Cunningham described and figured these,§ and they pretty well substantiate some of Ryder's conclusions.

Without desire further to weary by detail or reference to side-issues, enough has been said to justify possibility of the Flying Fish's breeding station in mid-ocean. At least, any one who has slowly traversed the Sargasso Sea in a sailing craft can easily understand those waters as most suitable quarters for the breeding and rearing of Exocœti. But again we are confronted by Howard Saunders's|| statement of their swarming into the rock-crevices for spawning purposes at the Chincha Islands. Even this can be explained by presence of seaweeds and tangle in the vicinity. According to Saunders, at the above quarters they breed at the end of March. Risso¶ gives beginning or mid-summer as when full of eggs in the Mediterranean. The Swale specimen may by degrees or in batches have shed its spawn in deep water, say, early in August, prior to its fatal food-forage visit to Kent waters. All the preceding haphazard guesses go to show how much is yet open for interesting observation and needful investigation, equally by the sportsman, the sea-traveller, and the naturalist.

\* 'Bull. U.S. Fish. Commis.' i. (1881), p. 283, pl. 19; and vol. iii. (1883), p. 195, and woodcuts.

† Suffice to mention Day, McIntosh, Masterman, Smitt, &c.

‡ In material found by Capt. Freemont, Compt. Rend. 1865, p. 342.

§ From Rattray's 'Buccaneer' Expedition, see Trans. Roy. Soc. Edinb. xxxiii. p. 108, pl. 7, fig. 7.

|| 'The Zoologist,' 1874, p. 3838.

¶ 'Ichthyologie de Nice' (1810), and 'Hist. Nat. . . . l'Europe Méridionale,' 1826, tom. iii. p. 446.



FIG. 2.

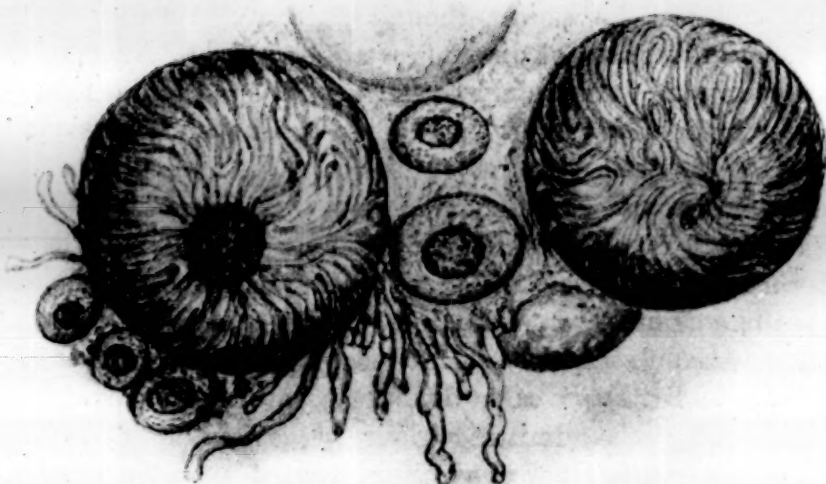


FIG. 2.—Some of the ovarian eggs, in different stages of development, with their adherent intervening mucous membrane, from the Swale Flying Fish (*Exocætus lineatus*), as sketched under the microscope. While confirming Haeckel's observations on the fibrillar nature of the egg-envelope of *Exocætus*, the specimen moreover shows the filaments' tendency to stream out. Compare fig. 4 below, and consult Ryder's descriptions and illustrations as quoted.

FIG. 3.



FIG. 4.

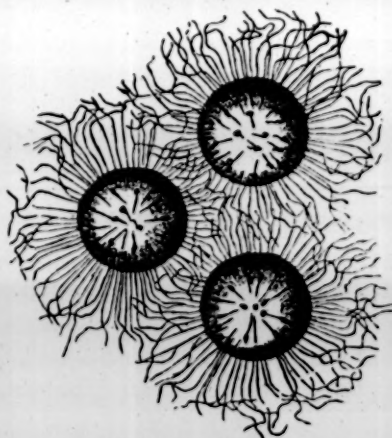


FIG. 3.—Unripe egg of the Saury Pike or Skipper (*Scombresox saurus*), showing the net-like envelope of fibres or filaments surrounding it, among which are seen a few of their swollen bases of attachment (after Haeckel).

FIG. 4.—Ripe eggs of the Gar-Fish (*Belone vulgaris*), with their wavy free filaments intertwined (after McIntosh and Masterman).

**THEIR MIGRATIONS.**—Flying Fishes of the *Exocoetus* type are acknowledged oceanic habitants of gregarious nature, usually met with by seafarers in considerable—nay, even vast—shoals. Some of the Atlantic species, though more numerous within the warmer latitudes, are yet distributed widely. They frequent the African seaboard, the neighbourhoods of Cape Verde Islands, Canaries, Azores, &c., enter the Mediterranean, and occasionally run up the Adriatic for a short distance. Smaller bands, or perhaps mere roving detachments, appear at irregular intervals along the Western Lusitanian and French coasts. Great Britain and Ireland come in for their advent more sparsely, particularly around the entrances to the English, the Bristol, and St. George's Channels. Even stragglers once upon a time hie north as far as Norway.\* Dr. Day† casts doubts as to shoals approaching our shores, though admitting their gregarious habits. But surely R. Q. Couch's personal observations‡ may be trusted! Even if it holds good that but a third of British records are based on capture of single specimens (*vide infra*), it does not necessarily follow that these have had no companions whatsoever in the vicinity—*e. g.*, Couch's lot pursued by Bonitos. If Day meant *immense* shoals the qualification might be allowed.

Subjoined we have drawn out in tabular form the chief data upon which Flying Fish have been reckoned among the British marine fauna:—

1765	June.	Carmarthen.	Up River Towy. <sup>1</sup>
1796	Sept.	Cumberland.	Solway Firth; Allonby.
1823	July.	Somerset.	Up River Parrett, near Bridgewater.
1825	Aug.	Dorset.	Off Portland Island (shoal).
1827 ?	—	Cornwall.	Up Helford River, near Falmouth.
1830–38 ?	Summer.	Cork, Waterford.	Off shore (shoals).
1840	„	Devon.	Plymouth Quay.
1845	„	Cornwall.	Mount's Bay (shoal).
1849	Oct.	Devon.	Plymouth; Stonehouse Pool.
1860 ?	—	Somerset.	Bristol Channel; Weston-super-
1876	Aug.	Somerset.	Bristol Channel (shoal). [Mare. <sup>2</sup>
1891 ?	—	Glamorgan.	Bristol Channel; Cardiff. <sup>3</sup>
1898	Sept.	Kent.	Up River Medway, near Rochester.
1905	Sept.	Kent.	Swale, inside Isle of Sheppey. <sup>4</sup>

<sup>1, 2, 3</sup> supposed to be *E. evolans*; <sup>4</sup>, *E. lineatus*; and all the others *E. volitans*.

\* Collett (R.). 'Norvège, Carte Zool.-Géograph. Liste Animaux Vertéb. de Norvège,' 1875. Refers to specimen taken in Christiania Fjord, 1848.

† 'Fishes of Great Britain and Ireland,' vol. ii. p. 155, footnote.

‡ 'Zoologist,' 1847, p. 1614.

The above demonstrates—*a*, wide intervals of yearly dates; *b*, midsummer and more frequently autumn their visitation period; *c*, neighbourhood of S.W. counties of England and S.E. of Ireland forming a central rendezvous; *d*, shoals seen in a third of the cases; *e*, individuals run into shallow waters, even up rivers.

As to the wide gaps in dates, this perhaps means little else than paucity of registered observation. Seeing that there is a tolerably regular annual migration of them in great schools to and from the Mediterranean, and if more sparsely even northerly along the Atlantic seaboard, presumably their presence in South British waters is more frequent than records show. Be that as it may, we have analogous phenomena of great hordes and more scattered troops of several species of Flying Fish sojourning on both sides of the American continents, and migrating like those frequenting the Atlanto-European seaboard.

Taking the matter in a broad sense, from what has been said, it is pretty evident that the bulk of the adult Flying Fishes make annual summer and partly autumnal migrations from their ordinary mid-ocean centres. For what purpose, then, these wanderings? Is it search for food, effects of seasonal changes, or stimulus for breeding purposes? Their spawning-grounds are still doubtful, while again there are records of presence of their fry in shoals a thousand miles from land.\* These reflections open a wide field for speculation, and emphasize the fact that there is yet a great deal to be learned respecting their economical relations. Hitherto their mode of flight seems mostly to have captivated voyagers and naturalists generally.

That the adults are fish-feeders may be taken for granted. Is it possible, then, that subsequent to their breeding season adults in squadrons start off on their travel after food. Sardines, otherwise Pilchards, swarm in congregations, and are fished for around the Canaries. They flock into the Mediterranean, other sections traverse the Atlantic border, and, as is well known, are abundant on the French maritime and S.W. neighbourhoods of the English Channel. Can this account for the presence of the Flying Fishes who follow the young Clupeoids, and their restriction (within limits) to the British area where observed during mid-

\* See Gervase F. Mathew in 'Zoologist,' 1873, p. 3739.

summer or autumn in companies, or otherwise? Stragglers, of course, there will be, either driven from their companions by enemies, or otherwise accidentally separated. But why do they occasionally ascend river-mouths to limits of the brackish water? The Kent specimen, one would suspect, entered the Swale following a shoal of whitebait, and it is not unlikely that others have gone up rivers under similar conditions.

Taking into consideration what paucity of information is available to judge of where the *Exocæti* breed and spawn, it behoves not to speak rashly. The uncoiling and grasping structure of their egg-covering is equally adapted to entwine the weedy vegetation of shallows, as it is capable of pelagic floating and attachment to objects in mid-ocean. Thus naturalists and others ought to clear up the breeding as well as food question. If my remarks stimulate inquiry among sea-travellers my object will be gained. The less practicable though more burning topic of their flight it is not my intention to enter into here.



NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE,  
1903.

By O. V. APLIN, F.L.S.

January 5th.—Very big floods.

7th.—*Galanthus elwesii* and *Cyclamen coum* in bloom. Aconites a fine show. Starlings singing about the buildings as if it were spring. Part of the great host of Wood-Pigeons seem to have gone into the eastern side of the county. Mr. W. Horwood writes from Caversfield : "The Wood-Pigeons are now with us in thousands, feeding on the clover and turnip-tops." They had also countless thousands of Starlings roosting in a cover.

9th.—A Wren roosting in a nest built last autumn in an Irish yew. Just after dusk I was attracted by a twittering note, and traced it to the nest.

13th.—Hard frost for some days. Bramblings with Chaffinches under beech trees.

16th.—Very severe weather. The Hedge-Sparrow is the only bird not silenced, and sings cheerily. Redpolls with Goldfinches feeding in alders. Saw yesterday, at Mr. Bartlett's, a Redwing of a pale warm buffy brown, shot near Banbury. A short time ago I received as a present a white Starling, a bird of the year, hatched at Tadmarton, and killed in June, 1902.

17th.—13° on the grass. The 'Banbury Advertiser' of the 15th contains a note to the effect that Starlings then had young in the gable of a house at Hook Norton. There are "squeaker" Pigeons at a farm here. The frost began on the 11th.

19th.—Thaw. Song-Thrush singing again.

24th.—Nuthatch trilling again, and utters the series of whistles, but has not acquired the long ones yet.

29th.—Very mild weather lately. Nineteen species of plants in bloom in garden.

Rainfall (at Bloxham Grove) 2.58 in. on thirteen days.

February 15th.—Having been away from home since the 30th ult., I find on my return that in consequence of the

wonderfully mild season twenty-three species of garden plants are in bloom. Chaffinch sang a little.

16th.—Blackbird singing.

20th.—Several apricot blossoms expanded, the earliest I ever saw. A lesser celandine flower, and hawthorn leaves three-quarters of an inch long in a spinney at the mouth of this brook. Marks of an Otter's presence.

27th.—Violent storm early, with rain and hail, and blew very hard in the forenoon. This was our share of the great gale which overturned tens and perhaps hundreds of thousands of trees in the west and Ireland. Here the damage done was slight.

The first half of this month was dry and warm. Rain fell on only eight days to the amount of 1.15 in. The old saying that all the months of the year curse a fine February proved a very true one this year.

March 1st.—Violent storm. Bullfinches eating gooseberry-buds, and to-day attacked those of the black currant, on which there are leaves large enough to cover a sixpence. By the next day they had nearly ruined these bushes, and I shot a male with his crop crammed with the fruit-buds. They rarely attack these buds. The pears are too far advanced to be harmed, most of the buds having opened.

3rd.—Grey Wagtail in the brook.

5th.—Starling investigating a nesting-hole.

6th.—Some Bramblings with other small birds on a field of backward young wheat near Wroxton.

10th.—Song-Thrush building in plum on wall again, and again using old horseradish leaf-stems (*vide* 'Zoologist,' 1904, p. 363).

13th.—Hedges quite green in places.

22nd.—Several plum trees in bloom. While watching about a score of bright fresh-looking Meadow-Pipits (migrants) on a hilly grass-field dotted with large ant-hills at Milcomb, I turned the glass on an Alpine or Water-Pipit (*Anthus spinoletta*). It was rather buff than pink underneath, and slightly marked on the breast; eye-stripe conspicuous; grey of the back not very pure. As, when it flew, it did not show *pure* white in the tail, it would be what some people call the Scandinavian form of the

Rock-Pipit, but which I prefer to call the northern form of the Alpine Pipit (*vide* 'Zoologist,' 1896, p. 379). The birds were tame; it was a sunny day, and I had the light at my back, so I was able to see the stranger very well; its large size made it conspicuous among its companions.

23rd.—Song-Thrush's nest with four eggs. One or two Chiffchaffs (silent) at Wickham.

25th.—A wonderfully early season. Hedges more green than brown. Pear in blossom. 65° in shade!

27th.—Blackthorn in bloom.

28th.—News of first Peewit's eggs, *viz.*, nest of three on the 24th in west Oxon. Also, in that district, of Long-eared Owl sitting on five eggs in an old Wood-Pigeon's nest in a spruce-fir on the 21st, and a Tawny Owl sitting on three eggs in an old Jackdaw's nest on the 25th.

29th.—Chiffchaff sang for the first time. Heard Curlews passing over about 11 p.m., starlight. Country fearfully wet.

31st.—Chiffchaff fairly common. Song-Thrush and Robin breeding freely. Meadows beautifully green; willows with a light green flush; some big thorn-bushes so thick with leaves that at a little distance you cannot see if there is a Magpie's nest in them or not.

March a wet, stormy month, with gales from S.W. and W. The most remarkable point is that there has been no east wind. Rainfall 3.40 in. on seventeen days.

April 2nd.—Bought from Mr. Bartlett a very fine recently killed Moorhen, which measured 13½ in. in the flesh.

3rd.—Saw a Robin's nest in an old tea-pot lodged in a box-bush.

5th.—Peewit's nest with four eggs on Milcomb Hill; a hollow in the turf, well lined with dead grass. Goldfinches noticed recently feeding on seeding plants of *Draba verna*. They are quite common now about the village. I have never before known the gorse-blossom so fine here, the damp mild season having suited it.

7th.—Flock of a score of Fieldfares; quite scarce this season. Fresh-hewn holes of Green and Barred Woodpeckers in willows.

9th.—Willow-Wren. The country about as green as it often is in early May, with the exception of big trees.

12th.—Sharp night frosts (as low as  $26^{\circ}$  at four feet from the ground) and cold winds set in to-day, and, lasting about a fortnight, completely ruined the promise of the fairest and earliest spring I ever knew. The damage done was very great on account of the forward state of vegetation, the flow of sap being suddenly checked and buds and tender foliage shrivelled up. Early breeding birds and delicate migrants also suffered.

14th.—Put a Crow off her well-concealed nest built against the main trunk of an elm where two boughs sprout out, and quite invisible at a little distance. From this nest four partly incubated eggs were taken on the 18th. I may mention here that I am inclined to think the same pair of Crows bred in the same group of trees the following spring; for on the 19th April, 1904, I found a well-hidden nest in the main fork of an elm a few yards from the nest-tree of 1903, and, on sending the boy up on the 21st, he brought down three partly incubated eggs, which closely resemble those of the previous year. As the eggs are peculiar, of a long green type (unlike any others that I have obtained in this locality), I feel pretty sure that they were laid by the same bird. In both years other Crows were breeding only a short distance away. I had the pleasure of showing Mr. J. Whitaker the hidden nest of 1904, and he was much interested in it. These concealed nests (of which I have seen a good many others) are rather curious, for Crows here more commonly build their nests in conspicuous places. A *possible* explanation of these particular cases may be that the nest-trees are close to a much-frequented cattle-hovel and hay-rickyard, where a few fowls are sometimes kept, and the birds had especial reasons for keeping their presence quiet. When Crows nest in a tall elm they usually build high up among the top branches, and the nest is as conspicuous as a Rook's, although never, I think, quite so near the top or among such small branchlets as Rooks affect. A fair-sized fork, or a fork in the main trunk in an elm, or a drawn-up spinney oak, is often chosen; but in most cases the nest is conspicuous. In spreading hedgerow or solitary oaks the nest is often on a partly horizontal limb where some branchlets break out, at some distance from the trunk, and I once saw one on a thin almost bare bough of an-oak which grew nearly horizontally for a space and then turned straight up, and



the nest was perched on the top where the growth bushed out. I do not think any boy, much less a man, could have got at this nest. Crows also build in evergreen conifers (scarce here), or "piney" trees, as they are called locally, near the top and close to the trunk; and I once saw one about twenty-five feet from the ground in the central pole (about five inches in diameter at the base) of a pollard willow, the poles of which had not been lopped; the nest was fixed in the small branchlets. Ash and big old alder trees also are used, of course, but the nest, save in the cases I have especially alluded to (and those in conifers), are almost always conspicuous at a distance. As this destructive bird is too common in this parish, I employed a boy who is a very good climber (and he who would take Crow's eggs here has to be a good one) to harry the nests. In the twelve days (17th to 28th) he raided fourteen nests containing fifty-five eggs. Four is the usual clutch about here, but five is not at all uncommon; the Crow will sit on three, but I have never known six.\* The eggs in the clutch usually resemble one another in character, but one is almost always slightly lighter coloured than the rest, and in some cases (more especially when five are to be laid) one egg is quite different, and usually lighter coloured than the others. This odd egg has often a clear greenish blue ground colour, spotted with distinct and sharply defined marks, some very dark. There are, of course, many exceptions, greater and less, but on the whole I think this is a fair description of the Crow's eggs found here. I have a clutch of four, all of which differ from one another considerably. The normal variation in size, shape, and colour is very great, and I have some curious eggs, and even clutches, which can only be considered abnormal. A large Crow's egg weighs over  $\frac{3}{4}$  oz.; a small, slender one over  $\frac{1}{2}$  oz.

15th.—Young Mistle-Thrushes flew.

(To be continued.)

\* Mr. R. W. Calvert, however, tells me that some years ago he has more than once found six Crow's eggs in a nest in the range of woodlands near Burford known as Widley Copse, Hens Grove, and Stockley Copse (formerly part of Wychwood Forest), at that period not yet given over to Pheasants, and a great resort of Crows, Hawks, Owls, and Foxes.

## THE RÉUNION STARLING.

BY GRAHAM RENSHAW, M.B., F.Z.S.

"BEFORE the paper is decayed on which this animal has been figured it will be ranked amongst those species which have perished from the face of the earth." So wrote Darwin in 1839 of the Falkland Island Wolf. His prediction, unhappily fulfilled by the destruction of the last survivor at Shallow Bay in 1876, might have been safely made of many other species, especially amongst birds. The White-winged Sandpiper of Tahiti, the Black Emeu, the Norfolk Island Parrot, the Philip Island Parrot, and the Mamo of the Sandwich Islands instance but too clearly the ease with which a species—and especially an island species—may be exterminated. Upon the fauna of the Mascarene Islands this disaster has fallen heavily, if one may judge from the list of vanished birds. The Rodriguez Owl (*Athene murivora*), the Mauritius Dove (*Alectorænas nitidissima*), and the Mauritius Crested Parrot (*Lophopsittacus mauritianus*) are cases in point, though less familiar instances than the Dodo and Solitaire. On Réunion there formerly abounded a very curious bird, the *Fregilupus*, or Crested Starling.

The Réunion Starling (*Fregilupus varius*) measured about twelve inches in total length. It was remarkable for its somewhat elongated, slightly curved, and sharply pointed beak; for the compressed, Hoopoe-like crest on its head; and for the strong curvature of the claws on its large feet. The head was of a light ashy grey colour, and the feathers of the crest had white shafts; the cheeks, throat, and under parts being white. The mantle, wings, and tail were ashy brown, the two latter being tinged with grey, as if they had been powdered; the lower back, rump, and upper tail-coverts were faintly washed with rufous. There was a large white spot or speculum on each wing. The beak was orange; the claws were citron-yellow. The iris has been figured as red or orange, and also as blue and brownish

blue ; although the latter tints have been supposed to have been due to the imagination of the artist, it is possible that they are quite correct, the purer blue belonging to fully adult birds. At any rate, one finds blue eyes amongst the surviving *Sturnidæ*, as the Andaman Starling, for instance. The tongue of the *Fregilupus* was frayed at the tip into several bristles ; the palate was studded like that of a Bird of Paradise with a number of tubercles, doubtless to assist in holding the food. Although the nest and eggs of the Réunion Starling are undiscovered, immature birds are known to have been browner than the adults, with the crest small and brownish instead of white. The weight of a *Fregilupus* in the flesh was said to be about four ounces.

The Réunion Starling appears to have first become known to Europeans in the seventeenth century. De Flacourt, the Directeur Général de la Compagnie Française de l'Orient, and better known, perhaps, as the chronicler of the fabulous Roc, observes, in his ' Histoire de la Grande Isle Madagascar,' an octavo volume published in Paris in 1661, " Tiououch c'est la huppe, il est tacheté de noir et de gris, et a une belle crest de plume." This mention of a crested Hoopoe-like bird might well refer to the native Starling ; but since (as pointed out by Levaillant) the *Fregilupus* has not a particle of black about it, perhaps Buffon should be considered the first describer of the bird, since he examined and figured an undoubted specimen in the Paris Museum. Strangely enough, he also styled it " la huppe noire," perhaps on the *lucus a non lucendo* principle !

As far as can now be ascertained, the habits of the Réunion Starling much resembled those of its living congeners. Occurring in great flocks like the Rosy Pastor (*Pastor roseus*) of to-day, it swarmed in the damper portions of the island, frequenting the marshes, and greedily feeding on seeds, and on the berries of the pseudo-buxus. The Starlings also attacked the coffee plantations, where they are said to have made dire havoc ; their large feet and curved claws would enable them to cling securely to the bushes and branches which they rifled. Enjoying liberal supplies of food, these birds became fatter and heavier than usual during June and July. Perhaps continual gorging dulled their wits, for they became so tame that the Creoles were able to approach close enough to kill them with sticks. The Starlings were called

"Martin" by the Creoles, a name also conferred on the Mynah (*Acridotheres tristis*), which had been introduced into Réunion from India.

The actual date at which the *Fregilupus* was exterminated will probably never be known. It was apparently abundant as late as the beginning of the last century, about which time Levaillant expressed the hope that some day travellers would give to the world the history of so common a bird. He had a specimen in his own collection, and knew of seven others; yet no ornithologist of repute seems to have met with the bird till M. Jules P. Verreaux, about 1833, obtained an example. In the short space of thirty years the Réunion Starling had become almost extinct; Verreaux used, indeed, to boast that he had shot one of the last of them. The bird seems to have first vanished from the coast and the mountainous districts near the sea. Professor Schlegel, then Director of the Leyden Museum, made, about 1868, special inquiries for the Crested Starling, a bird of which for many years previously nothing had been heard. He was assured that it yet lingered in the forests of the interior near Saint Joseph, though he does not seem to have obtained a single example. M. A. Legras, an able ornithologist actually resident on the island, had scarcely seen a dozen specimens in all his naturalist wanderings. A photo-engraving of the "Pointe de Saint Joseph" is now before me. This last refuge of the *Fregilupus* appears as a wild headland projecting into the sea, into which it is continued for some distance as a chain of islets; it is well clothed with grass and bushes, being luxuriantly fertile to the water's edge. One may perhaps fix 1860 as the approximate date at which the Réunion Starling was exterminated. Emile Trouette, in 1671, described Réunion as a huge forest peopled with birds of brilliant plumage, ignorant of the wickedness of man, who was able to destroy them. Poor things! if they were at first ignorant, they soon learnt their lesson from the sticks of the Creoles whose coffee-bushes they had rifled!

The actual cause of the extinction of the native Starling is not accurately known, though it is possible that it was exterminated by the coffee-planters. Introduced into Réunion in 1717, the coffee industry was for many years a very important and famous feature of the island; the greedy *Fregilupus*, swarming



in hungry flocks, would be by no means *persona grata* to the planters. Perhaps they purposely aided its exit, as the Sheep-raisers of the Falkland Islands destroyed the Antarctic Wolf; the very stupidity of the birds would go heavily against them, as it has done with many other island species. There is also reason, from the structure of the leg and foot, for supposing that the Crested Starling was largely a ground bird. It would thus be exposed to attacks from enemies other than man. Réunion forming portion of the "French Indies" eventually became largely peopled with Hindoos, and the Indian Mynah (*Acridotheres tristis*) was introduced. A burly wideawake bird, the Mynah soon multiplied on the island, being an alert destroyer of grasshoppers and similar prey. It may have indirectly destroyed the *Fregilupus* by sharing its food too liberally, or by feasting on its eggs and young. Any one who has ever kept a Mynah will recollect the avidity with which these almost carnivorous birds swallow pieces of raw meat. The rapidity with which the English Sparrow, introduced into the colonies, has driven away the native birds well illustrates this suggestion.

*Cadit rem.* The Réunion Starling has vanished utterly; even as a museum specimen it is exceedingly rare, and the following census seems to comprise all of them:—

1. Specimen in Paris Museum, figured and described by Buffon, and mentioned by Levaillant.

2. Fine bright example, also at Paris, sent in 1833 by Mr. Nivoy. Examined and measured by the late Dr. Hartlaub many years ago. Said to measure eleven inches in total length.

3, 4. Spirit specimens in the Paris collection. The soft parts of *Fregilupus* being so imperfectly known (the palate and tongue being apparently the only parts hitherto examined), one of these might well be dissected. This could be done without destroying it, actually enhancing its value.

5. Example in Levaillant's collection. Perhaps the specimen of the "Madagascar Hoopoe," which Latham, in 1783, mentions as having been only 9½ in. long. The bird figured by Latham was itself apparently immature, judging from the brownish tint of the upper plumage. See his 'General History of Birds,' vol. iv.

6. Specimen said by Levaillant to have been preserved in the

cabinet of M. Mauduit (probably = M. J. E. de la Varenne Mauduyt, who published two volumes on birds in London in 1784).

7. Specimen seen by Levillant in the collection of M. Raye at Amsterdam. Of this example nothing seems to be known, and it has probably perished. The same remark applies to (8) specimen in cabinet of M. Gigot Dorey (9), of M. Poissonier (10), and of the Abbé Aubrey, all of which are mentioned by Levillant.

11. An old specimen is preserved in the Leyden Museum.

12. Another example (probably the one studied by Sundevall) is in the collection at Stockholm.

13. A *Fregilupus* was preserved in the museum of the late Baron de Selys Longchamps, well known as a keen entomologist, especially as regards Odonata.

14. Another specimen is preserved at Caen.

15. Examples are in the museums of Pisa (15), Genoa (16), Turin (17), and Florence (18), being specimens given to Professor Savi previous to 1873 by a Corsican priest named Lombardi. Retaining only one for the Pisa collection, Savi generously distributed the others amongst his less fortunate colleagues. Assuming the birds to have been shot about 1860, these would be amongst the last of their race. The two examples (19, 20) added to the Port Louis Museum, Mauritius, should perhaps also be ranked as such.

21. In 1889 the collection of Count Riocour, whose grandfather had been an intimate friend of Vieillot, was dispersed at Vitry la Ville, near Châlons, owing to the death of the owner. Most of the series became the property of M. A. Boucard, including a *Fregilupus* mounted on a stand, afterwards obtained for the British Museum. I remember this specimen as exhibited many years ago in a special glass case at the Natural History Museum. It has now been removed to the students' collection, where I have again examined it. The only other example in this country appears to be the skeleton (22) made by Jules Verreaux from a bird which he shot in 1833, now in the Cambridge Museum. A few feathers adhere to one leg, and the orange covering of the mandibles has been partly retained. Another skeleton (23) is said to be preserved at Paris. With this statement is completed the history of the Réunion Starling.

## SUPPLEMENTARY NOTES ON THE BIRDS OF ANGLESEA.

By T. A. COWARD.

(Concluded from p. 386.)

**TUFTED DUCK.**—On another water I saw a pair of Tufted Ducks on April 17th and again on May 7th, but I cannot say if these were migrants or breeders.

**GOLDEN-EYE.**—On April 15th and 17th there were single brown-headed Golden-Eyes on two different waters, and on the 22nd four together.

**SCOTER.**—When on the rocks at Parc Point on April 21st I looked right down upon a drake Scoter which was swimming close inshore; the orange-yellow patch round the nostrils was most conspicuous, seen from above.

**QUAIL.**—A gamekeeper told me that in the spring of 1904 he heard Quail calling on Bwrrdd Arthur, but he had not heard anything of them this spring.

**WATER-RAIL.**—In March, 1905, this same keeper reported a Water-Rail on Llyn Bodgolched.

**RINGED PLOVER and DUNLIN.**—The resident Ringed Plovers were in noisily anxious pairs when I arrived at Rhos Neigr; but on April 15th, and on many subsequent days in April and May, I saw parties, varying in size, of Ringed Plovers and Dunlins. These migratory Ringed Plovers were noticeably smaller than the resident birds, and at times when some of the smaller race invaded the chosen stretch of beach of a pair of the residents they were chased away by the birds in possession. Most of the Dunlins were black-bellied birds. On May 2nd I found that the numbers of these two species were considerably increased. On May 12th-14th, and on May 21st, the flocks of these birds were largest, several of them numbering from fifty to one hundred birds.

**TURNSTONE.**—Occasionally small parties of Turnstones fed on the shingle or amongst the tangle, at times alone, and at times

with the other waders. The first party—eight birds—I saw on April 28th; two of these were old birds with white heads and much brighter orange legs than the younger birds. They were feeding amongst the stones, turning them over with a smart upward throw, and immediately darting upon anything which had been concealed beneath. On May 29th Mr. Aplin and I watched a strange gathering of birds at the spot on the beach where the White Wagtails were always to be found. A number of domestic fowls had come down from the little whitewashed cottage close to the shore, and were scratching in the damp sand near to and beneath the drifted and rotting seaweed. Amongst them half a dozen Turnstones were eagerly feeding, some of them following the fowls and carefully examining the raked-up sand and small stones. A number of Starlings, a few White Wagtails, and one or two Swallows, which occasionally settled on the weed to feed, completed the strange gathering, which, in the strong light on the blue-grey rocks and rich red weed, made a beautiful as well as curious picture. Two of the Turnstones were old birds with rich chestnut backs and very white heads. When we examined the sand where the birds were so busy, we found a small grub, which appeared to be the larva of some dipterous fly, buried in the sand beneath the decomposing seaweed.

**WOODCOCK.**—In a wood near Beaumaris I flushed a Woodcock from the dry bed of a stream on June 7th. It flew through the wood, dodging round trees, but keeping to the line of the ditch. I followed the ditch, and shortly came upon the bird standing in the ditch motionless, its bill almost touching the ground. When it rose again I lost sight of it. The keeper has never known the bird to nest in these woods, but they are good places for "cock" in autumn.

**LITTLE STINT.**—On April 28th a couple of Little Stints were on the beach with some Ringed Plovers; one bird, presumably a female, was slightly larger than the other. The birds were in summer dress, with rufous breasts, hardly so warm as the breasts of Sanderlings at this season. At first they fed with some Turnstones, which looked giants beside them. At times they pushed their bills deeply into the sand, but usually pecked after the manner of Sanderlings; indeed, though in plumage they



resembled small light-bellied Dunlins, their actions were far more like those of the Sanderling than the Dunlin.

**SANDERLING.**—Sanderlings were less abundant in April than in May. On April 15th I saw a single bird with a small party of Ringed Plovers and Dunlins, and once or twice thought that I detected others amongst distant flocks of Waders. On May 21st there were three with one flock; but on the 29th Mr. Aplin and I saw a party of perhaps a dozen resting on the sand at the mouth of the river, and Messrs. Oldham and Cummings came across two other flocks numbering about thirty birds each. On the 31st we saw many with Ringed Plovers and Dunlins in the Malldraeth Estuary.

**COMMON SANDPIPER.**—The Common Sandpiper reached Rhos Neigr on April 17th. I saw five on that date, and later met with birds on all the llyns and streams. I did not notice any passing birds on the beach.

**CORN-CRAKE.**—The first Corn-Crake I heard was calling on Holyhead Mountain on April 26th, and birds reached Rhos Neigr about four days later. The Corn-Crake was generally distributed and abundant after the rush on May 2nd.

**WHIMBREL.**—The Whimbrel arrived in the third week of April. I saw one bird within a few yards of the wall of the Holyhead Road where it crosses the Strait between Anglesea and Holy Island on April 19th. After this I met with odd birds or parties, both inland and on the coast, throughout April and May. On May 4th one flock numbered ten birds, and later I saw two, both inland, which contained seventeen each. There were Whimbrel still about at the beginning of June.

**LITTLE TERN.**—I did not notice any Little Terns until May 6th, but from then until the 12th, when a number came in and took possession of their usual shingle beach for nesting purposes, there were always one or two about the beach.

**COMMON and ARCTIC TERN.**—Birds of one or the other species were about by May 17th. One which I picked up, its head having been ripped off, probably by a Peregrine, was an Arctic.

**KITTIWAKE.**—On April 21st there were a number of mature and immature Kittiwakes on the beach at Aberffraw, at the estuary of the Ffraw.

**PUFFIN.**—The Puffins at the South Stack were not much in

evidence on April 26th. I saw no birds on the grassy ledges where they nest, though some may have been in the holes; there were, however, a party of eleven on the water.

**BLACK-THROATED DIVER.**—On April 21st, off Braich Llwyd, at the northern end of Aberffraw Bay, I watched a Black-throated Diver for some time. The bird was in summer dress, with slate-grey head and neck. The black throat and half-collar of white were very conspicuous. The bird gradually drew away further out to sea, but continued feeding so long as I could see it; its dives at times lasted for about thirty seconds, and it often brought up flat fish from the sandy bottom of the estuary. When one of these was brought to the surface the bird seemed to bite it over and over again as if to break it up before swallowing it.

**RED-THROATED DIVER.**—On the same day, a few miles from the same spot, I saw an adult Red-throated Diver. It was near enough for me to see, with the aid of my telescope, its slate crown and nape, red throat, and slightly upcurved bill. It was also diving, but did not remain long in sight, for after a time it rose and flew out to sea.

## NOTES AND QUERIES.

## MAMMALIA.

**Habits of the Noctule (*Vesperugo noctula*).**—In the October number of 'The Zoologist' (p. 397), Major G. E. H. Barrett-Hamilton asks for any information respecting this fine British Bat; so perhaps the following description of a large colony may prove of interest to him and other readers of this Journal:—During the early summer of the year 1890 I went to live in King's Lynn, and resided there for the most part until the autumn of 1892, since which time I have paid annual visits for a few days at a time, chiefly during the month of June. Soon after my arrival I became acquainted with a large colony of Noctules which had taken up their quarters in the roof under-drawing of a three-storeyed and fairly modern house in one of the leading thoroughfares (London Road). This house was then owned and occupied by an eccentric character named Brooks, but, with the exception of a bed and a chair or two, was not furnished. For several years after 1891 it was untenanted excepting by the Bats in the roof. In the spring these Bats were neither seen nor heard until about the end of April or early May (according to the season), when small parties would make their appearance in the evenings. As the weather became warmer in May a greater number would come forth each night for the evening flight. Towards the end of May and in early June the numbers leaving nightly were almost incredible. I have myself several times counted in one evening more than two hundred (the greatest number being two hundred and forty-five), whilst some young friends who lived in the next house have upon several occasions carefully counted close upon three hundred leaving in one evening. Towards the end of June they rapidly decreased in numbers, until well on into July, when not a single Bat would leave the dormitory, although numbers would be seen hawking in the air each evening. Nor would anything further be seen of them either leaving or returning to their resting-place that year, but the following spring they would issue forth exactly as they had done the year before, and this was continued annually. For ten or a dozen years, to my knowledge, these Bats had things to their liking, were not interfered with in their lodgings,

and slightly increased in numbers annually. The present occupiers of the house, however, objected to their presence, chiefly owing to the squeaking noises which they made. Last year they were ill-advised to securely fasten a piece of tin over the hole *in the early spring*, in order to keep the Bats out, whilst really they fastened them in. As the time advanced past the date for their appearance, I am told by the neighbours that the noises (squeakings) of the imprisoned Bats were terrible to listen to for about a fortnight; but eventually they succeeded in forcing one corner of the tin away, and many of them managed to squeeze out and get free, though, judging from the numbers seen, more had died inside. The aperture which formed the only entrance and exit of their chamber was a very small one (just large enough for one Bat at a time to crawl through), and was situated at the gable end of the house, where the brick wall and roof joined, and close to the spout. They commenced to come out, as a rule, about an hour before sunset, and sometimes it would take quite an hour and a quarter between the arrival of the first and the last. The order of their leaving was very curious. A loud squeaking would be heard for a minute or two near the inside of the hole; then a Noctule would appear, and launch itself into the air, followed in quick succession by four or five more. Then silence ensued for a minute or so, followed by the squeaking noises again, and another party of five or six would follow each other out. This mode of procedure would be carried on continuously. Silence, squeakings, and then Bats in constant succession. Most of the "parties" consisted of from five to eight individuals, though on occasions (particularly on evenings when the greatest numbers were leaving) I have seen as many as a dozen or more follow each other out without a break, but this was exceptional. These small parties were called families by my friends, but they scattered off individually and in separate directions immediately they were clear from the hole. Soon after dark the first of the returning Noctules would be heard fluttering to get back again into the hole, after which the fluttering would be continuous for an hour or more as they all returned. My young friends next door took advantage of this, and by means of a fishing-rod held from an upstairs window were able to knock down a good many into the yard below. From time to time I must have examined at the least seventy or eighty Bats from this colony. They were all Noctules, the largest measuring  $14\frac{1}{2}$  in. from tip to tip of expanded wings. I never saw any very young ones, although several, by their smaller size, I took to be immature. Both sexes were represented, and as far as I can remember were in about equal proportions. The stomachs of several which I examined contained chiefly broken elytra or wing-cases



of beetles, some containing those of the large dor-beetles. After quitting their home in late June and early July this colony of Bats evidently "camped out" for the remainder of the summer, either in the woods or elsewhere. The most curious thing, however, was that we could never see or hear them returning to their winter quarters after the summer was over. Probably they returned singly and silently in the autumn, as they were always there again when the spring came round. This was proved during the autumn of last year. The hole having been again securely nailed up, for more than a week the Bats tried to get in nightly, and in the mornings several were found in the back yard, badly maimed in their endeavours to find or force an entrance. During the present year they have not attempted to regain admittance into their old quarters, so no doubt they have given them up for good and gone elsewhere. For my part I am very sorry, as this colony was always a feature of great interest to me when in that neighbourhood. I have longed many times to enter their dormitory and examine them in their winter sleep, but this would have been impossible, except by removing part of the slated roof. North-west Norfolk must be a good field to work for any one interested in Chiroptera. Bats are certainly very numerous there, although, besides the Noctule, I had only the opportunity of identifying the Pipistrelle (*V. pipistrellus*) and the Long-eared Bat (*Plecotus auritus*). The latter I met with several times during the day in barns and hay-lofts near farmhouses.—HARRY B. BOOTH (Shipley, Yorks).

*Sorex minutus* in Shropshire. — On Oct. 6th last I picked up a female Lesser Shrew on the Long Mynd, Church Stretton, at an elevation of over 1500 ft. It was lying dead on one of the grassy tracks through the heather. It was a little difficult to measure, having apparently been trodden upon, but the head and body were about 50 mm. and the tail 40 mm. in length. The species has been previously recorded for Shropshire (H. E. Forrest, 'Zoologist,' 1900, p. 186), but I do not know if it has been met with in England at so great an elevation; in Scotland, however, it appears to ascend to a much greater altitude, for one was brought by a Cat into the observatory on the summit of Ben Nevis ('Annals of Scottish Natural History,' 1897, p. 42).—T. A. COWARD (Bowdon, Cheshire).

White Stoat.—A very fine male Stoat (*Putorius ermineus*) in perfect white winter dress was sent for preservation to Mr. Travis, from Cavenham, near Bury St. Edmunds, about the last day of September. I saw it about a fortnight later, and Mr. Travis, who has had dozens of Stoats through his hands, told me that a white one at this time of the year

was quite unique in his experience. He considers that white Stoats occur quite as frequently in mild winters as in severe weather.—  
JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

#### AVES.

**Nightingales in Algeria singing in August.**—English ornithologists are seldom in North Africa in August, and it may be worth while to record the fact that on Aug. 31st last the Nightingales were in full song in a ravine at Hammam Meskontine, in Eastern Algeria, at 9.30 a.m., and in a blazing sun. This information comes to me from a naturalist friend, the Rev. A. H. Cooke, who had been observing successfully the total eclipse of the sun the day before. Whether this indicates a second or even a third brood in the season, or whether it corresponds to what we call here an autumn song, I will not attempt to decide. With us, of course, they breed but once, and I have never seen a record of Nightingales singing after June. I have heard them in full song on the Lago Maggiore in the first week of July, and it would seem that the further you go south the later they can be heard singing.—W. WARDE FOWLER (Kingham, Chipping Norton).

**Breeding Habits of the Great and Blue Tits.**—With regard to Mr. Jourdain's note on this subject (*ante*, p. 309), I have never known a case of the Great or Blue Tit rearing two broods in the year. In my experience none of the *Paridae* are double-brooded, at any rate in the north-west of England. I agree with Mr. E. P. Butterfield that the question of some of the resident birds breeding twice is open to doubt. Take, for instance, the Mistle-Thrush and Chaffinch; both these are undoubtedly only single-brooded in this district, though very exceptionally they may rear two broods in the season. — S. G. CUMMINGS (Chester).

**White Wagtails in Autumn in Cheshire.**—Very little appears to be known in this country about the autumn migration of the White Wagtail (*Motacilla alba*). It may, therefore, perhaps be worth recording that on Sept. 3rd Mr. C. Oldham and I saw at close quarters four birds of this species on the Dee marshes at Burton, Cheshire. Two were adults in winter plumage, and two were presumably young birds of the year. A few days later I saw a solitary adult bird in the same locality, in the company of a few Pied Wagtails. — S. G. CUMMINGS (Chester).

**Late Martins' Nests.**—What is the latest date on which Martins have been observed feeding their young in the nests? They seem to

me to be much later than formerly, I believe owing to the persecution from the House-Sparrow; they are—in towns, at all events—often compelled to begin breeding after the Sparrows have finished. Three years running I have noticed one nest in particular as being extra late, and in each year I have found the young birds dead on the pavement below after the parents had left. This year they were seen feeding at the nest Oct. 14th, last year (1904) on Oct. 10th, and in 1903 it was well into October, but I have not kept a record of exact date. Chiffchaffs were “chipping” here as late as Sept. 15th. — R. B. LODGE (Enfield).

**Greenfinch and Hedge-Sparrow rearing each other's Young.**—Mr. Ellison's suggestion (*ante*, p. 391) that the Greenfinch, from its habit of feeding its young on predigested seeds, would not be a suitable foster-parent to the insectivorous young Cuckoo, makes me think it advisable to describe an experiment I made some thirty years ago in transposing the newly hatched young of a Hedge-Sparrow and those of a Greenfinch into each other's nests. I put two young Hedge-Sparrows into the Greenfinch's nest, and two young Greenfinches into the Hedge-Sparrow's, leaving in each case to the parent birds two of their own young to be brought up with two little strangers of equal age. It may seem a singular fact, but it is a fact, that both these mixed broods were successfully reared. At the end of about ten days—I do not remember the exact period—I found the young Greenfinches in the Hedge-Sparrow's nest, and the young Hedge-Sparrows in that of the Greenfinch, as well developed and (to all outward appearance) as thriving as their brothers and sisters in the nests of their proper parents. I changed the birds back before it was time for them to fly, so the experiment was not pursued to the very end; but, as far as the first ten days or so are concerned, I think it shows that one need not feel sceptical as to the competence of the seed-eating Greenfinch to rear the insectivorous Cuckoo. A course of feeding which agrees with the young Hedge-Sparrow should surely agree with the infant Cuckoo also.—C. B. MOFFAT (36, Hardwicke Street, Dublin).

**Increase of Goldfinches.**—The “scheduling” of the Goldfinch in Middlesex and Herts has had a good effect. There are now immense numbers of Goldfinches on the thistles, a large percentage being young birds. These, I believe, have been bred in the neighbourhood, chiefly in the extensive market-orchards.—R. B. LODGE (Enfield).

**Breeding Haunts of the Twite (*Linota flavirostris*).**—I was more than a little surprised to read (*ante*, p. 390) Mr. Allan Ellison's reply

to the further inquiry of Mr. Wilson *re* Twite and its distribution, wherein he states that "the bird breeds in most parts of the British Islands where moors, mountains, and exposed heathy places are found, being by no means confined to the northern parts." Now, it would be most interesting to have further particulars of these "most parts of the British Islands." In Wales I never was successful in finding it nesting, although I am fully convinced I looked for it in what I deemed very suitable places. I have it from very good authority that days have been spent trying to locate the breeding of this species in North Wales without success. It occurs there in winter fairly plentifully. The Twite breeds on some of our hilly bracken-covered slopes in the West Riding, as I have before stated, in little colonies; yet on an adjoining moor similarly placed, and to all appearances and aspects equally suitable as a habitat of the Twite, not one can you find, so that there is a something more than we reckon in the suitability of the breeding-site. I can hardly think the Twite a common bird in all—even hill or moorland—districts, or the collectors would not be so keen on clutches. Our Bradford naturalists, I am pleased to say, are not collectors, but many are the useless offers they get to exchange for the eggs of this species. One day in 1904 my son and I found six nests—four with six eggs, one with four, one with three; two latter perhaps not laid up. Every one of these nests had the conspicuous feather (occasionally two) that we Bradfordians have noted so frequently when photographing the nest, so that we expect always to find this odd adornment. I was mentioning this circumstance to our friend Mr. Forrest, of Shrewsbury, whilst he was with us on a Twite-nesting expedition; we found No. 1, and after a careful examination could not find even the odd feather; again we find another—not a feather in it; another surprise! This, too, when we had almost come to believe that, as far as our own district colony was concerned, Twites never built without this adornment! Only a few days later, and every nest found contained a feather (or feathers), mostly the hackle-feathers of the farmyard rooster. I mention this circumstance more to point out how one can get a fixed idea of the invariable rule of certain birds to use certain building material, and yet all at once this habitual order is altered, and in this case recontinued at a very little later period.—W. H. PARKIN (Studholme, Shipley, Yorks).

Cuckoo and Twite. — Mr. Parkin stated (*ante*, p. 348) that the bird-lovers in this district had paid great attention to Mr. W. Wilson's former statement in 'The Zoologist,' that in the neighbourhood of Aberdeen the Twite was *always* chosen as the foster-parent of the



Cuckoo. As I happened to make Mr. Wilson's acquaintance on the first day of the gathering of the Fourth International Ornithologists' Congress at London in June last, I lost no time in broaching this subject. From Mr. Wilson's description of the nest and eggs, and also from the site of the nest, I was certain that his bird was the Meadow-Pipit, and not the Twite, as I assured him at the time. However, all ornithologists and all searchers after truth in nature must feel grateful to Mr. Wilson for losing no time in publishing his mistake and the correction of it himself. In commenting on the above, Mr. Allen Ellison (*ante*, p. 390) asks for an authentic instance of the depositing of a Cuckoo's egg in the nest of a Twite. Unfortunately I have never actually found one myself, although I have examined many scores of Twites' nests, and in districts where Cuckoos are also plentiful. But that the Cuckoo does occasionally deposit its egg in the nest of this species is certain. Mr. James Ellison (a veteran birdnester), of Steeton, near Keighley, has come across several such instances, and I have seen some of the sets. In the year 1889 he showed me a clutch of Twite's eggs containing also an egg of the Cuckoo (all unblown and all slightly incubated) which he had just taken, and later during the same day he pointed out the Twite's nest on the moor whence he had taken them. Mr. James Ellison knows the Twite and its nest and eggs well, as I can personally testify, and I have no reason to doubt his word that altogether he has found Cuckoo's eggs in Twites' nests on, at the least, half a dozen occasions, although he has never met with a young Cuckoo in one of their nests.—HARRY B. BOOTH (Spring Royd, Shipley, Yorks).

The Cuckoo and its Foster-parents.—Probably the most complete list of foster-parents of the Cuckoo compiled by any British naturalist is one drawn up by Mr. W. Wells Bladen in 1896, of which I possess a copy by his kindness. The catalogue contains in all one hundred and forty-three species, in which the Twite is included, Mr. Bladen himself possessing the egg taken in Yorkshire. I have never seen a young Cuckoo in the nest of any of the Finches or Buntings, but our collection here contains a Cuckoo-Greenfinch clutch (four) taken by myself, and a few years ago a friend of ours had a Cuckoo's egg in a Greenfinch's nest in his garden. There were five eggs of the foster-parent, and my friend, who was a clever aviculturist, wished to see whether the Greenfinches could rear a young Cuckoo. He was strongly of opinion that they could not do so, but the nest was destroyed before the egg hatched. Three times I have had the Cuckoo's egg with those of the Bullfinch, all of which I believe to be perfectly genuine, though

there can be little doubt that there are a great many spurious Cuckoo-clutches in existence. In some cases a genuine Cuckoo's egg is added to a clutch of eggs which the Cuckoo herself never saw. Sometimes the imposition goes further, and only this last season a young friend of mine was taken in by a clutch of four Yellow Wagtail, with a palpable Sky-Lark's egg added to it. I blew this clutch myself, and there was no room for any doubt about the matter. The finding of a Cuckoo's egg in a Dabchick's nest seems to admit of a possible explanation that a Cuckoo may have used a Dabchick's nest as a temporary convenience on which to lay her egg, and was disturbed before she could take it away to deposit it in a Reed-Warbler's nest or other suitable nursery. — JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

[Mr. Bladen's list (published, I believe, privately), including the Twite, is also to be found in the 'Trans. N. Staff. Nat. Hist. Field Club,' March, 1896, where the Twite is again referred to as in Dr. Rey's list in 'Kuckucks.' In addition to Mr. Bidwell's list (1884), to which I referred (*ante*, p. 391), the same writer subsequently gave a "List of Western Palearctic species in the nest of which the Cuckoo's egg has been found" ('Bull. B.O.C.' v. pp. xxxii-v (1896)), in which he again included the Twite. A lengthy and excellent paper on the Cuckoo will also be found in 'Verh. Ornith. Ges. Bayern.' 1903, Bd. iv. pp. 123-178, entitled "Der Europäische Kuckuck," by J. A. Link.—Ed.]

**Late Stay of Swift.**—As supplementary to my note on summer migrants (*ante*, p. 359) the unusually late stay of Swifts may be mentioned. The main body seemed to depart, as usual, about the middle of August, but stragglers were seen fully a month later. I saw one near the church-tower on Sept. 17th, and two days later a friend saw another, and, strange to say, he shot a Wigeon the same evening; it is not often the two species are met with on the same date. I saw a single Swift almost daily to Sept. 30th, and my ornithological friends reported it, or another, up to Oct. 12th or 14th. Whether the same bird I cannot say, but a single specimen was seen in widely separated localities, sometimes alone, but often mingling with the few late Swallows. The somewhat severe hoar-frost we experienced since the dates above mentioned, I suppose, either killed the bird or constrained it to seek a more hospitable climate; but why did a single bird remain? Immaturity and consequent inability for long journey has been suggested, but its strength of wing would negative such a proposition, whilst the family cares of a late brood might have been an item in the delay; yet in some cases it has been observed that the desire for migra-

tion has overcome the otherwise powerful instinct of maternal love—late broods of House-Martins, &c., to wit.—G. B. CORBIN (Ringwood).

**How does the Osprey carry its Prey?**—In all the pictures I have seen of the Osprey carrying a fish, the bird has invariably been represented as gripping its prey by the middle in a parallel position. Although my experience of these handsome birds is an extremely limited one, yet I have had the pleasure of watching them bringing food to their young, and on that occasion, at any rate, all the fish they brought were carried by the head or gill-covers, their tails hanging straight down from the bird's talons. As I think this an interesting point, I should like to learn the experiences of some of your readers on the subject. Perhaps those who have had the good fortune of observing the bird in America may be able to say whether my observation is exceptional. It is possible that different Ospreys may carry their prey in different ways, and that is the point on which I should be glad to have some light. — A. H. MEIKLEJOHN (1, Colville Houses, Colville Square, W.).

**Spatula clypeata in Surrey.**—The Shoveler is perhaps of sufficiently rare occurrence in Surrey to make it worth while to record that on April 19th last I saw a pair on a large pond in the neighbourhood of Lingfield. By using a little caution I was able to get fairly close to them, and with the aid of a powerful glass could see the details of their plumage very well. I noticed that they sat considerably lower on the water than some Mallards which joined them, and on being disturbed, after flying round in circles, returned most persistently to the weedy corner of the lake where I first detected them. I have noticed that Mallards, after circling round in a similar manner, usually fly right away, and settle on some distant part of the water.—C. H. BENTHAM (Oxted, Surrey).

**Grey Phalarope in Cheshire.**—For about ten days in September a Grey Phalarope (*Phalaropus fulicarius*) frequented Redesmere, a large sheet of water near Chelford, Cheshire. On the evening of Sept. 19th I was told by a farmer that a strange bird of a kind he had never seen before had been swimming near him when he on the previous evening was in a wood which borders the mere. Soon after I entered the wood I saw the bird on the water at some distance from the shore, but after I had waited for a few minutes it came nearer, flying and swimming, until it was within a few yards of the bank. The bird was in winter dress; the forehead, chin, throat, breast, and belly were pure white, the back pearl-grey; the wings mottled with grey and white. A black or very dark grey streak extended from the black crown down the nape

to the lower neck, where it widened out, the grey being paler on the sides of the neck. A dark streak, from in front of the eye, extended backwards along the ear-coverts, but did not meet the markings on the nape. The bill was black. On the 21st I saw the bird again, and two days later it was seen by Mr. C. Oldham and Mr. J. J. Cash; one of the farmer's sons noticed it for the last time on the 29th. I watched the bird on the two days for perhaps an hour and a half altogether, and during the whole of that time I never saw it still for more than a second or two; it was constantly swimming or flying, the flights being generally short, though once or twice it flew for a long distance. As a rule it spent its time in the lily-beds, snapping at the insects which were flying over the water, or picking something up from the surface. When swimming it moved with the peculiar jerky action so characteristic of its family, darting first to one side, then to the other. Often it mounted on a lily-pad, ran across and slipped into the water on the other side, but I never saw it stand on a pad to rest, nor, while I watched it, did it go to the bank. On the 19th the bird took several short flights, flying from side to side, and snapping at insects in the air; it reminded me a little of a Wagtail feeding on insects which are flying a foot or so above the ground, but I never saw it actually hover. It flitted rather than flew above the water. When on the wing it often uttered a low, short whistle, and when catching flies on the wing it generally allowed its legs to dangle beneath it, only gathering them up when it flew for some distance. The Grey Phalarope is a casual autumn visitor to Cheshire; birds have been obtained in August and November, but the majority appear to have visited the county in September and October. On Sept. 28th, 1900, one was killed near Mobberley, but I have not heard of any occurrences of the species between that date and this.—T. A. COWARD (Bowdon, Cheshire).

**Breeding Habits of Birds.**—In reference to this subject (*ante*, pp. 309 and 346) there seems yet plenty of room for further observation. Taking a midland county—as, for instance, Bedfordshire—I have so far come to the following conclusions:—All species will lay at least a second clutch of eggs should the first have been destroyed, but if the second are also robbed, or for some reason deserted, with many species a third laying is not attempted; neither does this rule hold good should the first laying have been hatched and the young but a few days old before being destroyed. I have as yet no actual proof of any species attempting to bring forth a third brood should two broods already have been successfully reared during the season, although with such early and late nesting species as Thrush, Blackbird, Robin,



Sparrow, Stock-Dove, Ring-Dove, Moorhen, and Coot, &c., this seems generally taken for granted. But, to take as an instance the nesting of the Common Sparrow, I might add the conclusions of some careful observations on this species. I have never known them attempt a third brood, should the first two have been successful in leaving the nest, but if the first clutch be taken then two broods would still be reared, or as many as four clutches laid before a brood is reared, and after this no further laying attempted. The following are the only species nesting in the above-named county that to my knowledge ever attempt the rearing of a double brood, and I include several that rarely do so, and others that I am not as yet fully satisfied upon:—Mistle-Thrush, Thrush, Blackbird, Hedge-Sparrow, Robin, Stonechat, Pied Wagtail, Meadow-Pipit, Sky-Lark, Reed-Bunting, Yellowhammer, Common Sparrow, Tree-Sparrow, Greenfinch, Linnet, Starling, Wren, Swallow, House-Martin, Sand-Martin, Kingfisher, Ring-Dove, Stock-Dove, Moorhen, Coot, Grebe.—J. STEELE-ELLIOTT (Dowles Manor, Shropshire).

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**A Query.**—Some one of your correspondents might perhaps give us some account of the herd of Wild Red Deer, said to number some *five hundred* head, which occupy the fells to the north-east of Ullswater, of which I have received a bare statement lately. I do not fancy the fact is one in common knowledge amongst British naturalists. I would also like to know what population of *Dotterels* is to be found (1905) in the north-west of England.—J. A. HARVIE-BROWN (Dunipace, Larbert, Stirlingshire, N.B.).

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#### THE ZOOLOGICAL SOCIETY'S GARDENS.

SEVERAL interesting additions to the Zoological Gardens were made during September. First and foremost must be mentioned a fine young male Orang-utan from Sumatra, presented by Mr. H. N. Ridley, who had kept the animal for seven years in the Botanical Gardens at Singapore. It is probably, therefore, not less than eight years old. Mr. Ridley also sent an adult male hybrid between the Pig-tailed and the Common Macaque. In size and general appearance this fine Monkey favours his pig-tailed parent. In the matter of the tail, however, Nature has effected a compromise. In length it is like that of a Common Macaque, but in direction of growth the so-called pig-tailed curvature is evident, the result being an organ resembling very

much that of a Baboon. With the approach of winter owners of Monkeys begin to feel alarmed about the health of their pets during the coming cold weather, with the result that considerable numbers are offered to the Society. The most interesting of the specimens presented for this and other reasons are an example of the Abyssinian Guenon (*Cercopithecus aethiops*), from Khartoum, and two Red-rumped Guenons (*C. pygerythrus*), from the Shiré River, their scientific value consisting in the fact that the localities are known; but the most valuable of all the Monkeys are five Talapoin Guenons (*C. talapoin*), from Utanghi, in the Upper Congo, deposited by Mr. Rothschild. This rare species has not been exhibited in the Gardens for many years.

To the Carnivora have been added a three-banded Palm Civet (*Arctogalidia trivirgata*) and a Binturong (*Arctictis binturong*), both presented by Mr. H. N. Ridley. The Binturong is a valuable accession. So also is a Cat, alleged to have come from Calcutta, which proves, however, to be a variety of the South American Jaquarondi, a species rarely exhibited in the Gardens.

The breeding of Birds is now practically over, but the hatching of four Andaman Teals is worth putting on record as being probably the first time this species has been bred in captivity. Our stock of Pheasants has been increased by the purchase of two hen Sæmmerings, one hen Japanese, one cock Siamese, and a cock and two hens Elliot's. Time was when the latter was a fairly common species in captivity; recently, however, it has become scarce and valuable, and fetches the high price its beauty deserves. If we are successful in breeding this bird next summer the young will repay many times over the money expended on the parents. Our fine series of Macaws, including the Hyacinthine, Glaucous, Military, Red and Yellow, and Blue and Yellow, has been enriched by the presentation, by Mr. McBarnett, of a fine Red and Blue (*Ara macao*); and a large but immature female White-tailed Sea-Eagle, presented by the Duke of Orleans, makes a pair with the male of that species the Society already possessed.

A considerable number of Reptiles have come in, mostly deposited by Mr. Rothschild; but the Society is indebted to Mr. E. E. Green for an example of the rare and quaint Ceylonese Knob-nosed Lizard (*Lyriocephalus scutatus*). It is also satisfactory to record the birth of five Southern Anacondas (*Eunectes notaus*), a rare species which has certainly never previously bred in any European zoological garden.

R. I. P.

## NOTICES OF NEW BOOKS.

*Travels of a Naturalist in Northern Europe.* By J. A. HARVIE-BROWN, F.R.S.E., &c. T. Fisher Unwin.

THESE volumes in part constitute a welcome echo of a notable expedition long since described by Seebohm, and contain the notes written at the time by the other member, and apparently actual promoter, of the journey. The narrative of Seebohm is now supplemented by the original journal of Harvie-Brown, and, if the general reader will be more attracted by the first, the practical ornithologist will revel in the facts and details which are fully recorded in these two volumes, and which will prove invaluable to those who may contemplate covering the same ground, if they do not, as we think they will, incite others to visit and collect in those desolate regions.\* These daily records will provide future travellers with a knowledge of what to expect, and how best to realize these expectations; they also inspire dreams of further ornithological conquests. The discoveries made during the expedition are so well known to ornithologists as to render their repetition unnecessary, at least in this notice; but Mr. Harvie-Brown's notes contain much that is more than simply interesting, particularly as relates to the perching habits of birds in the region of the Petchora, which do not perch, or but seldom do so, in other countries. This aptitude is regarded by the author as "undoubtedly forced upon the birds by the great flooding of the country, and what was originally forced upon them has become a favourite habit."

The volumes also contain an account of two northern trips made in the company of the late E. R. Alston, a naturalist who now a quarter of a century ago left us all too soon. These journeys to Norway and Archangel, apart from their own reward, incited the idea of "*Eastward still*," which resulted

\* In the 'Geelong Naturalist' (2), ii. p. 75 (1905) appears an account of 'A Trip through Northern Siberia,' by R. E. Trebilcock, who was accompanied by Robert Hall, the well-known Australian ornithologist.

in some of the ornithological secrets of Siberia in Europe being unravelled.

The portraits given are the strength of the illustrations; it is pleasant to see the features of colleagues with whom one is unacquainted, and of whom we may have formed an erroneous impression. There is often much friction among naturalists, and much of it might be avoided or reduced by a little personal knowledge or acquaintance.

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*Genera Avium.* Edited by P. WYTSMAN. Parts 1-5. Brussels: Verteneuil & Desmet.

THIS work, which is to be published entirely in the English language, has secured the co-operation of P. L. Selater, R. B. Sharpe, W. R. Ogilvie-Grant, E. Hartert, E. Hellmayr, T. Salvadori, and other ornithologists, and promises to be a work of considerable importance. Five parts have reached us, each with a coloured plate, and following the plan of the publication, *viz.*, each family to appear separately with separate pagination, and the history of its classification to be given with synoptical tables of the genera (or subfamilies); a description of each genus, and a list of species, subspecies, and varieties, with bibliographical references and details of geographical distribution. The drawings are made by M. Keulemans, and no effort to obtain accuracy and to bring up the work to date has been spared.

